

## SECTION 07 13 19

### MODIFIED BITUMINOUS SHEET WATERPROOFING

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Self-adhesive, modified bituminous membrane.
- B. Concrete and masonry primer.
- C. Flashing cement.
- D. Protection board.
- E. Temporary protection board for horizontal surfaces.

##### 1.02 RELATED SECTIONS

- A. Precast concrete edge slabs at station platform and dielectric insulation for connecting dowels are specified in Section 03 40 00, Precast Concrete.
- B. Sealant for dielectric insulation is specified in Section 07 90 00, Joint Protection.

##### 1.03 MEASUREMENT AND PROCEDURES

- A. General: Measurement and payment for modified bituminous sheet waterproofing will be either by the lump-sum method or by the unit-price method as determined by the listing of the bid item for modified bituminous sheet waterproofing indicated in the Bid Schedule of the Bid Form.
- B. Lump Sum: If the Bid Schedule indicates a lump sum for modified bituminous sheet waterproofing, the lump-sum method of measurement and payment will be in accordance with Section 01 20 00, Price and Payment Procedures, Article 1.03.
- C. Unit Prices: If the Bid Schedule indicates a unit price for modified bituminous sheet waterproofing, the unit-price method of measurement and payment will be as follows:
  - 1. Measurement
    - a. Modified bituminous sheet waterproofing will be measured for payment by the square yard (square) or square foot complete in place.
    - b. Adhesives, fasteners, protection board, and accessories will not be measured separately for payment; such items will be considered incidental to the modified bituminous sheet waterproofing work and included in the measurement specified above.

2. Payment: Modified bituminous sheet waterproofing will be paid for at the Contract unit price for the computed quantities as determined by the measurement method specified in Article 1.03.C.1.

#### **1.04 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
  1. ASTM C208 Specification for Cellulosic Fiber Insulating Board
  2. ASTM D41 Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
  3. ASTM D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
  4. ASTM D257 Test Methods for DC Resistance or Conductance of Insulating Materials
  5. ASTM D4586 Specification for Asphalt Roof Cement, Asbestos-Free

#### **1.05 DESCRIPTION**

- A. Modified bituminous sheet waterproofing shall be a single-ply, self-adhering, rubberized asphaltic sheet membrane waterproofing system for vertical and horizontal surfaces as herein specified.
  1. Membrane waterproofing under station platform slabs and for concourse slabs, where indicated, shall be the modified bituminous sheet waterproofing specified herein only.
- B. The work of this Section includes dielectric insulation (membrane waterproofing) of precast concrete edge slabs at the station platform floor slab, as indicated.

#### **1.06 SUBMITALS**

- A. General: Refer to Section 01 33 00, Submittal Procedures, and Section 01 33 23, Shop Drawings, Product Data, and Samples, for submittal requirements and procedures.
- B. Product Data: Submit product data and detailed installation instructions for both vertical and horizontal applications
- C. Manufacturer's Certification: At completion of the installation, submit written certification, signed by the manufacturer or its authorized representative, that the materials used in the work were in accordance with these Specifications, and that they were installed in accordance with the material manufacturer's installation instructions and recommendations.

- D. Certified Test Report: Submit evidence of compliance with electrical resistance requirements for applications providing dielectric insulation. Include a certified copy of test results. Provide such test results as a part of the record documents submittal specified in Section 01 78 39, Project Record Documents.

## 1.07 QUALITY ASSURANCE

- A. Membrane waterproofing system shall be installed by an applicator/installer skilled and experienced in the type of work involved. Applicator shall be licensed and approved by the manufacturer who furnishes the materials.
- B. The Contractor shall make necessary arrangements with the manufacturer of the materials to be installed to provide on-site consultation and inspection service at no additional cost to the District, to assure the correct installation of the membrane waterproofing.
- C. The manufacturer's representative shall be present at the time any phase of the work is performed. Membrane waterproofing shall be applied only over substrate surfaces previously approved by the manufacturer's representative.

## 1.08 GUARANTY

- A. In addition to the guaranty requirements specified in General Conditions Article GC4.9, membrane waterproofing work shall be guarantied against leakage, defective materials, and defective installation of the completed waterproofing work. Any such defects or leakage occurring during the period of the guaranty shall be promptly and completely corrected, including all affected work, at no additional cost to the District.
- B. Said guaranty shall be in effect for a period of five years from the date of the Certificate of Substantial Completion issued by the District. The guaranty shall be signed by the waterproofing applicator or installer and countersigned by the Contractor, and shall be submitted to the District as specified in Section 01 77 00, Closeout Procedures.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Waterproofing Membrane: Pliable, self-adhesive membrane composed of high-strength polyethylene, factory-coated on one side with a layer of rubberized asphalt in minimum uniform thickness of 0.060 inch. Membrane shall also comply with the following electrical properties:

Property	Test Method	Typical Value
Volume Resistivity, 90 V - 60 sec.	ASTM D257	1.37 x 10 <sup>14</sup> Ω cm, average of 5 results

Property	Test Method	Typical Value
Dielectric Breakdown	ASTM D149	500 volts per mil
Insulation Resistance	ASTM D257	2.6 x 10 <sup>6</sup> megohm

- B. Concrete and Masonry Primer: Asphaltic primer as recommended by the membrane waterproofing materials' manufacturer and conforming generally to ASTM D41.
- C. Flashing Cement: Asphaltic adhesive or mastic as recommended by the membrane waterproofing materials' manufacturer and conforming generally to ASTM D4586 as appropriate.
- D. Protection Board for Vertical Surfaces: Rigid asphaltic-composition board as recommended by the membrane waterproofing materials manufacturer, nominal 1/4-inch thick, or structural insulating board conforming to ASTM C208, applied and held in place with adhesive or sealant recommended by the membrane waterproofing materials' manufacturer.
- E. Temporary Protection Board for Horizontal Surfaces: Rigid asphalt-composition, traffic-bearing board, nominal 1/4-inch thick, installed with adhesive recommended by the membrane waterproofing materials' manufacturer.

## PART 3 – EXECUTION

### 3.01 EXAMINATION AND CLEANING OF SUBSTRATE

- A. Verify that substrate surfaces are clean and dry, and that concrete is properly aged.
- B. Verify that substrate and backing surfaces are smooth and rigid where membrane turns up.
- C. Vacuum-clean substrate surfaces as required to remove dirt and dust.

### 3.02 APPLICATION

- A. Apply concrete primer to substrate surfaces at rate recommended by the waterproofing materials manufacturer.
- B. Membrane waterproofing for vertical and horizontal surfaces shall be applied in accordance with the manufacturer's latest specifications and installation instructions for membrane waterproofing.
- C. Reinforce membrane at inside and outside corners and edges and around penetrations and projections in the substrate. Clamp membrane properly into floor drains.

- D. After the membrane waterproofing application on vertical surfaces has been inspected and accepted by the Engineer, install protection board in accordance with the manufacturer's installation instructions and recommendations for protection of the membrane waterproofing from backfilling operations and backfill material. Install temporary protection board with adhesive on horizontal surfaces in accordance with the manufacturer's installation instructions and recommendations for protection from subsequent construction operations and traffic. Protection board damaged during subsequent construction operations and activities shall be immediately repaired or replaced. Remove temporary protection board just before placing concrete topping slabs.

### **3.03 DIELECTRIC INSULATION**

- A. In addition to the requirements for membrane waterproofing of horizontal surfaces specified herein, dielectric insulation shall meet the following requirements:
  - 1. Stop membrane waterproofing 1/2 inch below top of finished topping slab to allow for joint sealant application.
  - 2. Seal membrane waterproofing completely around dowel sleeves.

### **3.04 FIELD QUALITY CONTROL**

- A. Verify that installed membrane is free from wrinkles, blisters, and exposed surfaces. Damaged or defective membrane shall be corrected.
- B. Verify that waterproof membrane is free from defects or damage before covering or concealing the membrane with subsequent construction and finishes.
- C. If water test of horizontal surfaces is required by the Contract Specifications, conduct such test by applying a flood coat of water along the high areas so that water at least 1/4 inch deep flows over the areas. Perform test under the observance of the Engineer. Should a leak or low spot appear, repair the area and retest as specified above until all work is watertight and acceptable.
- D. Clean adjacent surfaces of spillage and splatterings of bituminous materials.

**END OF SECTION 07 13 19**